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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,478	04/12/2006	Yasuo Matsuki	288992US0PCT	3424
22850	7590	10/16/2009		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
AHMED, SHAMIM				
ART UNIT		PAPER NUMBER		
1792				
NOTIFICATION DATE		DELIVERY MODE		
10/16/2009		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/575,478

**Applicant(s)**

MATSUKI ET AL.

**Examiner**

Shamim Ahmed

**Art Unit**

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 June 2009.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-4 and 6-22 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 2-4, 6-22 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/CDC)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments with respect to claims 1-5 have been considered but are moot in view of the new ground(s) of rejection.

As to Ikai et al (USP 5,700,400), applicants argue that Ikai discloses to form an initial condensate comprising silicon compound of silane containing monomer and cobalt compound as catalyst followed by a thermal decomposition treatment and during the thermal treatment, the catalyst of cobalt is not present and therefore, the produced film by Ikai does not included the presently claimed silicon-cobalt film having a Co/Si atomic ratio of 0.1 to 10.

In response to the argument, examiner states that the argument is not persuasive because the condensate already includes both the silicon compound and the catalyst of cobalt compound and additionally, the catalyst such as cobalt is present in the 5 in an amount of 0.05 to 50 moles per 100 moles of hydrosilane monomer, which equates the ratio of cobalt to silicon is about 0.0005 to 0.5 (col.15, lines 57-65).

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 2-4, 6, 9-19 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikai et al (5,700,400).

Ikai et al teach a process of forming a semiconductor material (film) by subjecting a hydrosilane monomer such as n-hexalinane or n-heptasilane etc. and such compound satisfy the at least one compound as of the instant claim 2 (see the list in col.3, lines 41-col.4) to dehydrogenative condensation followed by thermal treatment and the process is conducted in presence of catalyst comprises cobalt complex such as bis (cyclopentadienyl) cobalt (also see the list in col.10, lines 59-col.11, lines 14).

Ikai et al also teach that the semiconductor is formed with maximum efficiency and a minimum cost (col.1, lines 29-34) and starting with the mixture of the monomers of hydrosilane as hydromonosilane or hydrodisilane (col.2, lines 64-67) and the cobalt containing catalyst (col.8, lines 41-53).

Ikai et al also teach the condensate already includes both the silicon compound and the catalyst of cobalt compound and additionally, the catalyst such as cobalt is present in the 5 in an amount of 0.05 to 50 moles per 100 moles of hydrosilane

monomer, which equates the ratio of cobalt to silicon is about 0.0005 to 0.5 (col.15, lines 57-65).

Ikai et al may not teach the entire claimed range of the atomic ratio of Co/Si.

However, the film produced by Ikai et al appears to include both the silicon and cobalt having the atomic ratio of cobalt to silicon (discusses above) which falls or overlaps within the claimed range and overlapping range is obvious, see 2144.05 [R-5] .

As to claims 18,21-22, Ikai et al teach the deposited film having a thickness of 0.01-500  $\mu\text{m}$  that equates to 100 nm to 50,000nm (col.16, lines 50-53).

5. Claims 7-8 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikai et al as applied above, and further in view of Tanaka et al (2002/008486) or Yamazaki et al (2002/0038889).

6. Ikai et al discusses above in the paragraph except to include the light treatment along with the heat treatment.

However, Tanaka et al teach that the deposited metal silicide film heated with light having wavelength of 200 or more will stabilize the deposited metal silicide film having silicon and cobalt (paragraph 0041).

Additionally, Yamazaki et al teach a process of manufacturing semiconductor film having silicon and cobalt (Co) including the step of heat treating with **heat plus light irradiation** to produce the film with improved crystallization [0059].

Therefore, it would have been obvious to one of ordinary skilled in the art at the time of claimed invention to employ Tanaka et al or Yamazaki et al's teaching for

producing the semiconductor film with improved stability and improved crystalline structure as suggested by Tanaka et al and Yamazaki et al, respectively.

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (571) 272-1457. The examiner can normally be reached on Mon-Thurs day (7:00-3:30) Every Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G. Norton can be reached on (571) 272-1465. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Shamim Ahmed  
Primary Examiner  
Art Unit 1792

SA  
October 12, 2009

/Shamim Ahmed/  
Primary Examiner, Art Unit 1792